

ALGERIAN *MICROLEPIDOPTERA*.

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It had been my intention to devote the spring of 1903 to increasing my collection of Moorish *Microlepidoptera*, and especially to visit the interior of the country, instead of confining myself to the coast near Tangier as in the preceding year; but on arriving at Gibraltar, a few days after Christmas, 1902, the news of further disturbances due to the insurrection in the neighbourhood of Fez, and the very general impression which prevailed that even Tangier itself was by no means safe, diverted my thoughts towards Algeria.

A strong inducement in this direction arose from the study of an Algerian collection very kindly made for me by the Rev. A. E. Eaton, which was found to contain several undescribed species. Of these the more interesting came from Biskra, a locality where Mr. Meyrick had also found several new genera and species. My anticipations were however by no means equal to the wealth of interest and novelty yielded by this northern projection of the Sahara.

Although in January snow was visible on the high mountains to the east from the windows of the Continental Hôtel in Algiers, I was not a little surprised to be refused a ticket at the station when proposing to start for Biskra on the 3rd of February, and although eventually the train did start, an official note was written on the ticket that the company refused to guarantee conveyance to our destination. The line was said to be blocked by snow in the neighbourhood of Sétif, but we got through, and notwithstanding that during daylight we never lost sight of snow from Algiers to Biskra inclusive, there were no obstructions on the line.

During a stay of about three months on what is usually regarded as a desert it was evident that Biskra at least was no desert to an entomologist, and the somewhat higher ground of El-Kantara, where I spent a month, began to be almost equally productive before leaving it about the end of May. Except in the oases, almost exclusively devoted to date-palms and mud dwellings, there is of course a marked absence of trees, but the plains and low hills on the borders of the Sahara produce low scattered herbage and stunted woody plants or trailing shrubs in sufficient abundance, while along the river beds (generally known as "Oueds") there is a profusion of *Tamarix*. In recording the larvæ found on various forms of tamarisk I have not attempted to distinguish species, their foliage being always extremely similar when the plants are not in flower. Intermixed with these are

found such shrubs as *Atriplex halimus*, *Lycium europæum*, &c., and both here and on the drier plains many succulent plants occur in profusion, *Suæda*, *Salsola*, *Zygophyllum*, *Arthrocnemon*, and others. At Hammam-es-Salahin ("Baths of the Saints" Gallice "Fontaine Chaud") a magnificent hot spring supplies the baths which hold a high reputation among the Arab population for the cure of all complaints, especially those to which they are most subject; here *Arundo phragmites* is undistinguishable, except by its larger size, from the European form with which we are familiar, attaining a height of from ten to fifteen feet where it follows the line of the heated water running from the spring above.

The most conspicuous plant, and one which is found everywhere on the flat, is *Limoniastrum guyonianum*. Its purple flowers are a feature in the landscape in the month of May, and one can scarcely find a fair sized specimen on which the large round terminal galls of *Oecocceis guyonella*, Gn., are not conspicuous. I have seen quite a thousand on one large shrub, the old dry galls remaining after their occupants have left them. Succulent plants, probably from their special adaptation to the storage of moisture, were noticeably much frequented by *Lepidoptera*. It must be extremely interesting to a botanist to study the methods by which almost every desert plant seems to strive for the same result, possessing in each instance some peculiar means of defence against the prevalent drought, either in its manner of collecting or conserving a sufficiency of water. It may be mentioned that in 1903 there was not a single shower at Biskra or at Hammam-es-Salahin during the time I spent there. Perhaps for this reason larvæ seem to recognise the advantage of frequenting the stems of their food-plants; in the interior of the stem any larva must necessarily find more protection from scorching sun rays, as well as being nearer to the limited water supply.

One finds here among the Micros an unusual proportion of gall-makers. This habit is adopted by at least seven distinct genera:—*Phalonia*, *Oecocceis*, *Colcophora*, and four new ones (*Anocceis*, *Cecidophaga*, *Hypoceis*, and *Proactica*).

I am able to record nine gall-making species in these genera, without taking account of *Amblypalpis olivierella*, Rgt., the galls of which I believe I also found on *Tamarix*, and two others not yet bred, one on *Gymnocarpon fruticosum*, possibly an inquiline, and one on *Haloxylon articulatum*.

Another remarkable preference is to be noticed. The leaves of

*Limoniastrum* are apparently very stiff and dry ; pressing them in the hand one might suppose they contained little or no moisture. The stems are hard and woody, nor does the plant appear to be one that is likely to be nutritive or succulent, yet a small piece shut in a well-ventilated bottle such as I generally use for breeding purposes will quickly give off moisture ; and it is almost impossible, except by taking out the leaves and thoroughly drying the bottle every day, to keep larvæ from being soaked by the water which accumulates on the sides. Consequently, we find a great number of species choosing this as their food. Single species of *Agdistis*, *Aristotelia*, *Hypocecis*, n.g., *Apotistatus*, n.g., *Trifurcula*, and a Phycid recognised and bred ; one *Aponoeca*, n.g., one *Gelechia*, one *Aristotelia* taken exclusively on this plant and undoubtedly attached to it, and another larva, at present unrecognised, closely imitating the leaf in its shape and colouring which was found in both seasons but not reared ; moreover, the Pterophorid mentioned by Meyrick under the name of *siceliota*, Z., constantly dislodged from this shrub, must in the absence of any species of *Cistus* be at least strongly suspected to feed upon it.

The genus *Coleophora* is well represented ; up to the present I have succeeded in breeding nineteen species, taking several others on wing, and finding cases of two or three additional species not at the present identified.

*Gelechiadæ* are very numerous, the *suadella* group predominating ; they swarm at lamp-light and around the crassulaceous plants near Hammam-es-Salahin. The genus *Scythris* and its allies seems to be also largely represented. There is a notable absence of *Tortricidæ*, at least up to the end of May, but perhaps these may prove to be more abundant during the following months.

At El-Kantara, and evidently more so at Batna, Lambessa, El-Guerrah, and Constantine, and from thence to the coast, the fauna and flora present a more European character, but at Biskra almost every species differs in some recognisable degree from its European congeners, and although assuming much the same pattern and colouring as some already known form, seems to be so uniformly distinguishable as to constitute something more than a mere topomorphic variety. Where it is only a question of size, as among plants in *Arundo phragmites*, mentioned above, one cannot regard the variation as of special value ; but when either with or without increase of size one finds persistent and uniform differences, however slight, it seems well to record them by separate names.

El-Kantara is at a higher elevation than Biskra, and more to the north; here, during the first two or three weeks of my visit, collecting was slow and uninteresting work. The desert plants were for the most part absent; there was a rather monotonous abundance of *Artemisia* (*herba-alba* ?), and of *Acanthyllis armata*, but the ground varied much in elevation, and before I left the place at the end of May many species not seen in the field came to light in the garden of the hotel, including several *Phycitidæ* recognised by Sir George Hampson as useful additions to the number of species hitherto represented in the British Museum. *Nemotois constantinella*, Bkr. (n. syn. = *demaisioni*, Rgt.), which does not occur at Biskra, was flying at the end of April and in the beginning of May on the mountain to the north of the El-Kantara gorge with one or more species of *Pleurota*, but of the undescribed species found in this locality it was frequently impossible to secure a representative series; some very distinct forms taken in places not easily accessible are still unfortunately unique (*e. g.*, *Micropteryx cyaneochrysa* and *Scythris marionella*).

In 1903, in something less than four months' work, with the assistance in the field of my indefatigable Italian valet Sola, who would cheerfully spend a day in tracking any desirable *Acarus* through a ton of hay, and is now quite an experienced collector, I managed to accumulate and set over 3000 specimens in good condition, in spite of many other calls upon the attention and interest of a traveller. The greater number of obviously new species were already described before starting again in November, but I was left with a residue of more or less doubtful cases requiring further study and research. Several of these have since been successfully dealt with.

In November, 1903, Morocco being in a still more hopeless condition of lawless anarchy than in the previous winter, I went again to Biskra, rather in the hope of clearing up doubtful points in the life-history of previous captures than of securing additional species. Such work promised to be extremely enjoyable, resembling the leisurely recreation of picking up one's birds after a furiously rapid grouse-drive, as contrasted with the continued strain required to ensure the heaviest bag in the shortest possible time. For this purpose I chose Hammam-es-Salahin as head-quarters, meaning to make excursions into the desert from time to time. Even if the weather of 1903 was exceptionally favourable, that of 1904 was generally acknowledged to be very exceptionally unfavourable. High winds prevailed for at least twenty days out of every thirty, with many blinding sand-storms,

and not unfrequent rain. The first three or four months were eminently disheartening, and long excursions were impossible, but my hostess was an excellent cook, and managed to give a relish to everything that found its way into the kitchen, including Ibis and Hoopoes.

Light, which had been so productive in the previous season, was but a poor attraction, and collecting could be successful only by hard and persistent work among low scattered plants, on which it was often exceedingly difficult to recognise traces of the minute larvæ expected to frequent them. *Gelechia*, of the *suedella*-group, feeding upon many crassulaceous plants, proved to be easily distinguishable in the larval stages, although hopelessly mixed in my series of the previous year. *Salsola tetragona*, *Traganum nudatum*, and *Zygophyllum cornutum* yielded additional material in aid of persistent efforts to clear up the muddle, but there is still more to be done in this direction, several larvæ having failed to feed up to maturity. A successful search for the unknown larva of *Teracolus nouna* [see Ent. Mo. Mag., XL, 99 (1904)] was a rather laborious distraction, involving several long walks with much climbing on high rocks, and an almost too intimate acquaintance with *Cerastes* and other dangerous snakes, some of which were abundant even within a few yards of the little hotel; but fortunately the only victim during my stay was a fine St. Bernard dog belonging to the establishment.

In looking back to these two short seasons spent in trying to find out what *Microlepidoptera* occur at and about Biskra, it no longer surprises me that the casual visits of those collectors who preceded me should have produced so few additions to previous lists. The somewhat rich harvest now to be recorded consists in great measure of species by no means easy to observe, including many to be critically distinguished from their near allies only by a knowledge of their life-histories, and which would almost certainly have otherwise escaped recognition.

There are still some undetermined larvæ of which I know the habits and food-plants.

The months of June, July, and probably up to October, could not fail to produce much additional material. My own too limited opportunities have enabled me to do little more than indicate the probable wealth of the Saharan fauna by so far supplementing the scanty Algerian lists.

In the descriptions which follow are included the species taken by Mr. Eaton, as above mentioned, some of which I failed to meet

with. I am deeply indebted to him for the carefully detailed observations which have accompanied his generous contributions to my collections from these and other localities.

The botanical nomenclature adopted in this paper is that of Professors Battandier and Trabut, joint authors of the "Flore de l'Algérie," to the latter of whom I desire to express my thanks, as also to the botanical staff of the British Museum (Natural History) for valuable assistance rendered in determining specimens.

## HYPONOMEUTIDAE.

### 293.—CEROSTOMA, Ltr.

2456 : 1. — CEROSTOMA INDECORELLA, Rbl.

*Cerostoma indecorella*, Rbl. Verh. Z.B. Ges. Wien., LIII (1903), 410—11, No. 34 (1903).<sup>1</sup>

*Antennae* white, barred above with brownish grey. *Palpi* projecting more than the length of the head beyond it, clothed with long rough hair-scales forming a somewhat cone-shaped brush, from near the base of which the short terminal joint protrudes obliquely; white, dusted with black scales. *Head* and *Thorax* dull white, the latter very slightly dusted. *Forewings* elongate, with moderately acute apex, not falcate and scarcely depressed; dull white, slightly shaded along the dorsal and terminal areas with very pale brownish grey and much spotted and streaked with sooty black; on the basal third, and a little beyond it near the fold, the black spots are arranged somewhat transversely, some crossing the fold but not reaching the dorsum, thus giving to the base of the wing a strong chequered appearance; from the middle of the fold and along and above the cell are black, longitudinal lines following the venation, but beyond the cell they become somewhat suffused and partially coalescent; a black transverse spot lies at the end of the cell, three or four small spots on the middle of the costa and a somewhat confused series of rather larger spots around the apex and termen, those before the apex running through the cilia, those below the apex followed by some minute black dusting on the cilia which are otherwise white, blending to brownish grey at the torus. *Exp. al.*, 19—23 mm. *Hindwings* shining, very pale pearly grey, with even paler cilia; the termen is very slightly sinuate below the produced apex. *Abdomen* shining, pale brownish grey. *Legs* white, the tarsi with black dusting on their underside.

*Hab.* : ALGERIA—Biskra, 24.III—21.IV.1903; Hammam-es-Salahin, 18.IV.1903; El-Kantara, 5.V.1903; Ouargla-Ghardaja (Hammada), 12.IV.1893.<sup>1</sup>

I took fifteen specimens of this species at Biskra, Hammam-es-Salahin, and El-Kantara, some at light and some beaten from bushes of *Nitraria tridentata*, with which they appear to be associated. It is a variable species, some specimens being devoid of the basal

chequering while the extent and number of the black longitudinal lines also varies, but it is always easily recognisable and quite distinct from anything hitherto described. Some varieties approach *nebulella*, Stgr., while others might almost appear to be white varieties of *satellitella*, Stgr.

## GELECHIADAE.

### 297.—METZNERIA, Z.

#### 2494 : 1.—METZNERIA INCOGNITA, *sp. n.*

*Antennae* whitish ochreous. *Palpi* whitish ochreous, the median joint suffused externally with dark brownish ochreous. *Head* and *Thorax* whitish ochreous. *Forewings* whitish ochreous, with a straight brownish ochreous streak along the cell, and another parallel to it below the costa, produced beyond the cell and diffused upward to the costa before the apex; a broad dark brownish ochreous line runs along the termen, and the cilia are almost entirely suffused with brownish ochreous in which there is only a faint indication of a median line; underside purplish grey, cilia pale ochreous. *Exp. al.*, 16–18 mm. *Hindwings* shining, dark purplish grey; cilia cupreous. *Abdomen* and *Legs* whitish ochreous.

*Type*, ♀ (96478); ♂ (89710). Mus. Wlsm.

*Hab.*: ALGERIA—El-Kantara, 6–20.V; Hammam-es-Salahin, 16.V.1904. Four specimens.

Closely allied to *aspretella*, Ld., but distinguished by the brownish ochreous streaks and terminal line, and by the dark hindwings. It is nearer to *agraphella*, Rgt., but has no grey or fuscous scaling along the wing and the cilia of the hindwings are very much brighter and more ochreous.

#### 300 : 1.—LEOBATUS, Wlsm.

(λεώβυτος, 'η. = a highway).

*Type*, *Leobatus fagoniae*, Wlsm.

*Antennae* (♂) subserrate and shortly ciliate beneath; basal joint without pecten. *Maxillary Palpi* short. *Labial Palpi* long, recurved, terminal joint about the same length as the median, pointed; median smooth, closely scaled. *Haustellum* rather roughly scaled towards base. *Head* and *Thorax* smooth. *Forewings* elongate, lanceolate, widest at the middle: *neuration* 12 veins; 7 and 8 stalked, 7 to costa, 6 out of stalk of 7+8; rest separate. *Hindwings* slightly broader than the forewings, with rounded dorsum and termen, tornus evenly obliterated in their curve, apex slightly protruding, sinuate, but not abruptly excised beneath; cilia (1): *neuration* 8 veins; 3 and 4 connate; 5 hardly approximated, almost parallel with 4; 6 and 7 stalked. *Abdomen* rather flattened. *Legs*: hind tibiae profusely clothed.

Intermediate between *Gelechia*, Hb., and *Acompsia*, Hb., differing from the latter in vein 6 of the forewings arising from the stem of 7+8 in which it also differs from Busck's description of *Gelechia*, as also in the smooth median joint of the palpi. The neurulation of *Gelechia* as given by Meyrick, "Forewings: 6 seldom out of 7 near base," would include this form, and his description of the palpi, "thickened with more or less rough scales beneath," might be strained so as not to exclude *Leobatus*, but as by his tabulation it would go to *Acompsia*, Hb. (= *Recurvaria*, Hw., Meyr.), the erection of a genus for *fagoniae* seems justified.

2509 : 1.—*LEOBATUS FAGONIAE*, *sp. n.*

*Antennae* black. *Palpi* pale brownish ochreous, the median joint smoothly clothed, with two blackish spots externally; terminal joint at least as long as the median, with two black annulations. *Head* pale buff. *Thorax* blackish, the tegulae tipped with buff. *Forewings* buff, with a slight rosy tinge, the extreme base and the dorsum to two-thirds suffused with black, the outer half of the cell also strongly suffused with black which is connected with the dorsal shade, except where a spot of the ground-colour remains in the fold, this discal shade is further connected to the costa before and beyond the middle, thus the whole basal two-thirds of the wing are overlaid with black, except a patch on the middle of the costa, another patch toward its base extending to the fold, and a spot in the fold a little before the middle; the outer edge of the black shading is somewhat clearly defined by a band of the pale buff ground-colour, which is again suffused towards the apex with pale bronzy brown, the black reappearing along the termen and in scattered dots through the smoky brownish ochreous cilia. *Exp. al.*, 15 mm. *Hindwings* broader than the forewings, slightly indented below the apex; pale grey, shining; cilia pale brownish cinereous. *Abdomen* ochreous, shaded across the middle with smoky black. *Legs* ochreous, the tarsal joints faintly spotted with blackish.

*Type*, ♂ (96569); ♀ (96922). Mus. Wlsm.

*Hab.*: ALGERIA—Biskra and Hammam-es-Salahin, 17.XII—22.III, Larva *Fagonia glutinosa* and *sinaica*, II, excl. 14-20.IV.1903; 7-12.III.1904. Twelve specimens.

I found the larva of this species by no means unfrequent on *Fagonia glutinosa* and *sinaica*, spinning loose webs along the trailing stems and upon the ground beneath or the rocks behind them. It occurs on the plains to the west of Biskra and on the hills behind Hammam-es-Salahin, also abundantly on the smaller hills beyond the Biskra race-course, and near the Freuch cemetery.

303.—*GELECHIA*, Hb.

2510 : 1.—*GELECHIA MONTIVAGA*, *sp. n.*

*Antennae* fuscous, banded with pale hoary grey. *Palpi* brownish white,

sprinkled externally with fuscous. *Head* brownish white. *Thorax* pale hoary greyish. *Forewings* with straightened costa and lanceolate, slightly depressed apex; pale hoary greyish, profusely sprinkled throughout with pale greyish fuscous scales, among which a few groups of ochreous scales forming obscure discal spots are distinguishable with the lens; there is also a faint ochreous streak from the base, beneath the costa, traceable to about one-third; cilia pale hoary greyish, lightly sprinkled with pale greyish fuscous. *Exp. al.*, 15 mm. *Hindwings* scarcely indented below the apex; pale grey; cilia pale brownish cinereous. *Abdomen* grey. *Legs* pale brownish cinereous, sprinkled and banded with pale fuscous externally.

*Type*, ♂ (96484); ♀ (89284). Mus. Wlsm.

*Hab.*: ALGERIA—El-Kantara, 3.V.1903.

Six specimens taken on the higher slopes of the mountain near the railway, but scarce. An inconspicuous species, but differing from any with which I am acquainted.

2538: L.—GELECHIA LACERTELLA, *sp. n.*

*Antennae* greyish fuscous, with faint paler annulations. *Palpi* with well-developed coarse brush beneath; cinereous, much sprinkled with greyish fuscous. *Head* and *Thorax* pale greyish ochreous, with a few pale fuscous scales. *Forewings* pale greyish ochreous, profusely sprinkled with greyish fuscous which becomes darker, almost black, in a costal spot near the base, a plical spot a little beyond it, a second more conspicuous plical spot at about two-fifths, a small discal spot above and a little beyond the last, a small spot at the end of the cell, and a dark costal shade preceding a broken transverse band of the pale ground-colour, less sprinkled with darker scales than the remainder of the wing-surface; cilia pale greyish ochreous, profusely sprinkled with fuscous, except at their tips. *Exp. al.*, 18--20 mm. *Hindwings*, costa ciliate throughout, cilia very long towards base; shining, brownish grey; cilia brownish cinereous. *Abdomen* shining, brownish grey. *Legs* brownish cinereous.

*Type*, ♂ (88984); ♀ (88990); Larva (88992). Mus. Wlsm.

*Hab.*: ALGERIA—El-Kantara, 4-25.V.1903. Larva *Acanthyllis armata*, 6.V, excl. 25.V—30.VI.1903. Nineteen specimens.

This species is extremely common in the dense tufts of *Acanthyllis armata* on the sides of the low hills. The larva makes a web along the stems and I should strongly recommend a pair of thick leather gloves to any one who desires to collect them upon this most forbidding plant. The larva has a black head and a broad black pronotal plate of even width, the pro- and meso-thoracic legs are black, the metathoracic corresponding to the colouring of the segments; yellowish white with two dorsal and two subdorsal lines of pale brown.

Apparently nearly allied to *pinguinella*, Tr., but it is a smaller insect with wings proportionately shorter. The markings and colouring are also extremely similar but by no means identical.

2584 : 1.—*GELECHIA SINUATELLA*, *sp. n.*

*Antennae* pale ochreous. *Palpi* whitish ochreous, the divided brush on the under side of the median joint speckled with brownish. *Head* whitish ochreous. *Thorax* pale brownish ochreous. *Forewings* pale ochreous, with a more or less pronounced rosy tinge, finely dusted with brownish scales; a long dark tawny brownish fuscous streak runs from near the base to a point half-way beyond the end of the cell and the apex; near its narrow base it sends out a slight angle across the fold, and following the fold is gradually dilated to a little before the middle, thence narrowing again, with its lower margin somewhat sinuate, it curves downward to the end of the cell throwing out then a narrow projection towards the apex; a few obscure spots around the apex and termen precede the whitish ochreous cilia which are thickly sprinkled with brownish atoms. *Exp. al.*, 18–20 mm. *Hindwings* broad, trapezoidal, emarginate below the apex: brownish grey; cilia shining, pale greyish ochreous. *Abdomen* shining, pale ochreous. *Legs* whitish ochreous.

*Type*, ♂ (8298); ♀ (96594). Mus. Wlsm.

*Hab.*: ALGERIA—Biskra, 9.III.1895 (*Eaton*), 3–31.III.1903 (*Wlsm.*), 28.IV.03 (*Eaton*); Hammam-es-Salabin, 18.V.1903 (*Wlsm.*). Eleven specimens.

I took several specimens of this species during my stay at Biskra, but all singly and it was not noticeably attached to any particular plant. It is very closely allied to *Gelechia plutelliformis*, Stgr., but larger, paler, and much more uniform in its colour and markings.

(*To be continued*).

LIST OF BRITISH *DOLICHOPODIDÆ*, WITH TABLES AND NOTES.

BY G. H. VERRALL, F.E.S.

(*Continued from page 199*).

14. *D. confusus* Zett.: this species is, as far as I know, limited to the sandy district in North Suffolk, where it is not uncommon.
15. *D. plumipes* Scop.: a very common and very beautiful small species. I have taken it in numerous localities, ranging from Bournemouth to Tongue.
16. *D. Wahlbergi* Zett.: very similar to *D. plumipes*, but quite distinct; I have found it only in Hampshire, Sussex, Essex and Herefordshire.
17. *D. pennatus* Mg.: common from Cornwall to Sutherland. The species of this group, though all quite distinct, require considerable care to differentiate.